DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1, 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph (US 2003/0108063) in view of Iizuka (US 6,888,796) and Aoki (US 6,529,548).

Regarding claims 1 and 13, Joseph describes a network connection method/system for connecting a first communication network and a plurality of user terminals (fig. 2, system 300 connecting internet 21 (first communication network) to users 51,53,55,57a-c), when a second communication network is interposed between said first communication network and said plurality of user terminals (fig. 2, 22 & 23 together being the second communication network is in between), said second communication network employing a second protocol different from a first protocol employed in said first communication network (para. 44, second network comprising 22 & 23 passes internet [IP] traffic using ATM protocol) , said system comprising:

Joseph describes a scheduling apparatus (fig. 11 62a) at the ISP site 22 (second network), with correction to an overhead amount between data conforming to said second protocol and data conforming to said first protocol (para. 55-56, including packet encapsulation for converting to the other protocol), but fails to describe:

an overhead amount correction unit receiving rate information which represents a current rate set between the second communication system and said plurality of user terminals for correcting an overhead amount on a rate based on said second protocol to a rate based on said first protocol;

a scheduler for shaping a transmission rate for the data conforming to said first protocol from said first communication network such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit;

a protocol converter for converting data conforming to said first protocol after said scheduling apparatus has shaped the transmission rate therefor to data conforming to said second protocol for use in said second network;

Joseph fails to describe:

an overhead amount correction unit receiving rate information which represents a current rate set between the second communication system and said plurality of user terminals for correcting an overhead amount on a rate based on said second protocol to a rate based on said first protocol;

a scheduler for shaping a transmission rate such that the data is delivered to a network at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit

Iizuka describes:

an overhead amount correction unit receiving rate information which represents a current rate set between the second communication system and said plurality of user

terminals for correcting an overhead amount on a rate based on said second protocol to a rate based on said first protocol (fig. 1 & col. 4, lines 23-45, in the rate control circuit 20, timer 20a & calculator 20b receives data & the respective rate information which is used for correcting an overhead amount of rate, see col. 6, lines 38-47).

a scheduler for shaping a transmission rate such that the data is delivered to a network at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit (col. 6, lines 38-47, transmission controller 20c & packet size controller 20d together (scheduler) shapes the communication (transmission) rate such that data is deliver at a transmission rate equal to or lower than said rate calculated by the timer 20a & calculator 20b (overhead amount correction unit));

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate an overhead amount correction unit and a scheduler as in Iizuka with the above specifications for the system of Joseph.

The motivation for combining the teachings is that it can cause data from the transmitting terminal sent via the IP network to conform to the communication rate of a receiving terminal (Iizuka, col. 2, lines 15-19).

Joseph already describe provisioning & transmitting user terminals data conforming to said second protocol from said protocol convertor (fig. 2, to users 33, 35, 37 & 40). Joseph and Iizuka combined further describe: a current data rate detector for supplying said scheduling apparatus with said rate information as indicative of a currently set reception rate (Iizuka, fig. 1, timer 20a & rate calculator 20b resolving the

reception rate) and a scheduling apparatus shaping the transmission rate therefor (Iizuka, fig. 2, transmission controller 20c & packet size controller 20d shaping transmission rate), but fail to describe:

a multiplexer being configured to transmission after said scheduling apparatus has shaped the transmission rate therefor.

Aoki describes a data communication receiver subsystem (fig. 1) comprising:

a multiplexer being configured to transmission after said scheduling apparatus has shaped the transmission rate therefor (col. 8, lines 11-19, information relay 16 as part of mux 17 detects rate and supplies the BAUD rate to the output receiver-transmitter UART device).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to incorporate the multiplexing subsystem of Aoki for the multiplexer of Joseph and Iizuka.

The motivation for combining the teachings is that by providing the communications rate, it lessens the likelihood that data reception is to fail (Aoki, col. 2, lines 2-6).

Regarding claim 8, Joseph, Iizuka and Aoki combined further describe: the current rate detector periodically applies the rate information to said scheduling apparatus at regular time intervals (col. 2, lines 56-66, monitoring for each time period for power savings).

Regarding claim 9, Joseph, Iizuka and Aoki combined further describe: said current rate detector applies the rate information to said scheduling apparatus when the set rate based on said second protocol is updated (col. 7, lines 13-24, applies the baud rate of the input serial data when the serial data is provided).

Regarding claim 10, Joseph, Iizuka and Aoki combined further describe: said current rate detector supplies said scheduling apparatus with said rate information as indicative of a transmission rate set between a user terminal and said multiplexer in the event of hand-shaking (col. 7, lines 13-24 & col. 8, lines 11-19, providing the output subsystem the baud rate information indicative of the transmission rate to be used (handshake)).

Regarding claim 11. Joseph further describes: said first communication network is an IP network, said data conforming to said first protocol is an IP packet, said second network is an ATM network, and said data conforming to said second protocol is an ATM cell (fig. 3, internet 21 (first communication network)'s data is IP, going into ISP & CO 22, 23 (second communication network) being ATM cells).

Regarding claim 13, it is a method claim comprising a subset of claim 1. Thus, it is rejected under the same rationale as claim 1.

Allowable Subject Matter

2. Claims 2-7, 12 and 14-18 allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 2, the prior art fails to describe, in addition to claim 1 limitations, the limitations of:

"a classification processing unit for classifying data conforming to said first protocol received from said communication network based on quality guaranteed classes set thereto; a rate measuring unit for measuring a transmission rate for a preferential class among said classified classes";

"a weighting coefficient calculation unit for calculating a weighting coefficient based on said rate calculated by said overhead amount correction unit such that a minimally guaranteed rate is assured for a minimum rate guaranteed class among classes classified by said classification processing unit;

a weighting scheduler for scheduling data conforming to said first protocol of said minimum rate guaranteed class and of a weighting applied class among said classified classes based on the weighting coefficient calculated by said weighting coefficient calculation unit to deliver the data in accordance with the scheduling".

Regarding claim 3, the prior art fails to describe, in addition to claim 2 limitations, the limitations of (expanded version of claim 2's weighting scheduler):

"a preferential control scheduler for scheduling the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate

calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 4, the prior art fails to describe, in addition to claim 1 limitations, the limitations of (variant of claim 3's preferential control scheduler):

"a preferential control scheduler for scheduling the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of said preferential class, the data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 5, the in addition to claim 1 limitations, new limitations plus limitations comprising a variant of claim 3's preferential control scheduler and expanded claim 2's weighting coefficient calculation unit and weighting scheduler):

"a preferential class upper limit setting unit, operative when the difference between the transmission rate of the data conforming to said first protocol of the preferential class a measure by said rate measuring unit and said rate calculated by said overhead amount correction unit is lower than a minimally guaranteed rate for a minimum rate guaranteed class among the classes classified by said classification processing unit, for setting an upper limit to the transmission rate for said preferential class for shaping, such that the minimally gurararanteed rate can be assured for said minimum rate guaranteed class;

a weighting coefficient calculation unit for calculating a weighting coefficient based on said rate calculated by said overhead amount correction unit and the transmission rate for the preferential class measured by said rate measuring unit such that a minimally guaranteed rate is assured for the minimum rate guaranteed class among the classes classified by said classification processing unit;

a weighting scheduler for scheduling data conforming to said first protocol of said minimum rate guaranteed class and of a weighting applied class among said classified classes based on the weighting coefficient calculated by said weighting coefficient calculation unit to deliver the data in accordance with the scheduling; and

a preferential control scheduler for scheduling the data conforming to said first protocol of said preferential class, the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a transmission rate equal to or lower than said rate calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 6, it is a systems claim comprising similar limitations of claim 2, with the exception of expanding the scheduler limitations to the preferential control scheduler of claim 4).

Regarding claim 7, it is a systems claim comprising similar limitations of claim 3, with the exception of expanding the preferential control scheduler of claim 6.

Regarding claim 12, it is a method claim comprising a subset of claim 3, where prior art cannot find the following limitations:

"scheduling the data conforming to said first protocol from said weighting scheduler, and data conforming to said first protocol of a best-effort class among said classified classes such that the data conforming to said first protocol is delivered at a

transmission rate equal to or lower than said rate calculated by said overhead amount correction unit, and for preferentially scheduling the data conforming to said first protocol of said preferential class, preferentially scheduling the data conforming to said first protocol from said weighting scheduler at a timing at which there is no data conforming to said first protocol of said preferential class, and delivering the data conforming to said first protocol of the best-effort class at a timing at which there is no data conforming to said first protocol from said weighting scheduler".

Regarding claim 14, it is a method claim with inventive limitations as stated for system claim 4.

Regarding claim 15, it is a method claim with inventive limitations as stated for system claim 5.

Regarding claim 16, it is a method claim with inventive limitations as stated for system claim 6.

Regarding claim 17, it is a method claim with inventive limitations as stated for system claim 7.

The closes prior art, Haddock (US 2004/0081093), disclose conventional policy based QoS which identifies ingress traffic to a QoS group and performs scheduling, either singularly or in combination, fail to anticipate or render the above features obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WARNER WONG whose telephone number is (571)272-8197. The examiner can normally be reached on 6:30AM - 3:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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